1. Which members of the Circle class are encapsulated?

The members that are marked private are encapsulated because they can only be accessed inside the class.

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2. What name must the constructor of a class have?

A constructor must have the same name as the class.

---

3. Explain the difference between the private and public access modifiers.

- private means only the class itself can access the member.
- public means any other class can access the member.

---

4. Consider the following code. Is the last statement valid or invalid? Explain.

```
Circle dot = new Circle(2);
dot.radius = 5;
```

It is invalid if radius is private, because private members cannot be accessed outside the class.

---

5. Use the Roo class to answer the questions.

a) What is the name of the class?

Roo

b) What is the name of the data member?

x

c) List the accessor method.

getX()

d) List the modifier method.

setX(int z)

e) List the helper method.

factor()

f) What is the name of the constructor?

Roo

g) How many method members are there?

There are 4 methods:

setX(), getX(), calculate(), and factor().

---

6. What is the difference between a class and an object?

A class is a blueprint or template.

An object is an actual thing created from that blueprint.

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9. Data members in Moo class

private double y;
private static int x;
private static final z;

a) Which data member is a constant?

z (because it is final)

b) Which data members are variables?

y and x

c) Which data member(s) are instance members?

y (because it is not static)

d) Which data member(s) are class members?

x and z (because they are static)

---

11. Compare and contrast overriding methods to overloading methods.

- Overriding happens when a subclass replaces a method from a parent class with its own version. The method name and parameters stay exactly the same.

- Overloading happens in the same class when multiple methods have the same name but different parameters.